# 32T Test Plan –
# All Sky Map (5a)

Original Author: Stephen Ord
Documentation Number: 46-03001.05
Latest Revision Letter: Rev 03
Latest Revision Date: 4 January 2010

## 1 Introduction

An "All Sky Map" in this context is taken to imply the full FOV of the instrument. For the MWA the FOV is a function of frequency. This task requires the formation, at three different pointing positions, of a full FOV image at three different frequencies across the MWA bandpass. This demonstrates the basic performance of both the tile and the imaging pipeline. No integration across frequency or time is implied or will be performed. This plan is responsive to requirement #5a contained in the memo "MWA 32-T Objectives and Quality Assurance Evaluation Criteria", dated 4 September 2009 (46-03001.99).

## 2 References

This task requires pointing and frequency flexibility, the RTS and Monitor and Control interface will have to operate to a level that permits the communication of pointing parameters. The M&C and RTS interface is currently under development.

The imaging task for 32T is similar to that of 512T. However we *do not* have to apply a wide field polarimetric calibration to the same degree as required by 512T. The 32T imaging pipeline will be outlined in a publication currently in preparation.

## 3 Measurement Description

The task required is to *produce an all-sky map at 3 pointings and 3 frequencies.* The measurement required is that the noise statistics of the maps are as predicted from system temperature and array considerations.

### *3.1 Frequency Resolution*

No frequency resolution is required, no integration across frequency is implied. An image from a single 40kHz channel would suffice for each pointing.

### *3.2 Time Resolution*

As this is a demonstration of basic imaging capability no integration in time will be attempted and a single 8 second cadence will be generated.

### *3.3 Instrumental Polarization*

The basic imaging task will not convert the image from instrumental polarisation.

### *3.4 Wide-field Correction*

As no integration of images is implied no wide field correction will be performed.

## 4 Resources Required

### *4.1 Staffing*

maging is an entirely automated task within the Real-time system. This system is intended to operate without intervention. In reality it is reasonable to assume that the RTS will have to be managed initially by one or more of the RTS development team

### *4.2 Hardware*

To demonstrate the RTS imaging capabilities we depend upon the successful operation of the complete array

- Operational tiles and beamformers, receivers
- Operational correlator
- Operational Real-time computer with sufficient capability to perform the task.
- Monitor and Control system – must at least provide RTS with pointing parameters.

### *4.3 Software*

Operational RTS

Operational Monitor and Control system with frequency and pointing control capability.

Basic status communication between M&C and RTS

### *4.4 Execution Time and Constraints*

After convergence of the calibration system in principle 3 X 8 seconds of observing time is required to meet this goal.

## 5 Success Criteria

Lack of obvious image artifacts and a noise floor consistent with the array and the system temperature.

# Revision History

| Rev Ltr | Date | Author | Description |
|---|---|---|---|
| 01 | 2009-09-18 | SMO | First draft at 5a. |
| 02 | 2009-09-28 | SMO | Corrections |
| 03 | 2010-01-04 | RFG | Formatting |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |